

**Alaska Department of Fish and Game  
Division of Wildlife Conservation  
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## **Evaluation and Testing of Techniques for Ungulate Management**

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**Research Performance Report  
1 July 2000–30 June 2001  
Federal Aid in Wildlife Restoration  
Grant W-27-4, Project 1.56**

This is a progress report on continuing research. Information may be refined at a later date.

If using information from this report, please credit author(s) and the Alaska Department of Fish and Game.

**FEDERAL AID**  
**ANNUAL RESEARCH PERFORMANCE REPORT**

ALASKA DEPARTMENT OF FISH AND GAME  
DIVISION OF WILDLIFE CONSERVATION  
PO Box 25526  
Juneau, AK 99802-5526

**PROJECT TITLE:** Evaluation and testing of techniques for ungulate management

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**COOPERATORS:** Kenai National Wildlife Refuge

**GRANT AND SEGMENT NR.:** W-27-4

**PROJECT NR.:** 1.56

**SEGMENT PERIOD:** 1 July 2000–30 June 2001

**WORK LOCATION:** Kenai Moose Research Center, Soldotna

**STATE:** Alaska

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**I. PROGRESS ON PROJECT OBJECTIVES**

OBJECTIVE 1: To provide for activities and expenses associated with maintaining and operating the Kenai Moose Research Center.

OBJECTIVE 2: To allow for continued evaluation of immobilizing drugs used in the capture and handling of moose and caribou.

OBJECTIVE 3: To continue to evaluate new techniques and equipment for monitoring reproductive activities such as remote determination of breeding and calving date.

OBJECTIVE 4: To identify indices of body composition and energy and protein balance.

OBJECTIVE 5: To allow for evaluation of new and innovative techniques that may be useful for ungulate management.

OBJECTIVE 6: To improve methods for chemical determination of digestibility of plants, to develop additional assays of plant chemical defenses, and to develop a standard nutritional database for forages of moose across Alaska.

OBJECTIVE 7: To quantify the relative contributions of dietary nutrients (energy and protein) and nutritional reserves toward caribou performance.

## **II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD**

JOB 1: We fed and cared for an average of 30 moose and 18 caribou during this period. In addition, we bottle-raised 10 caribou calves and 3 moose calves for nutritional experiments, accomplished the reconstruction of the road to the MRC facilities, maintained the fences and pens of the facility, and constructed 4 additional feeding stalls for experiments.

JOB 3: We continued to test the Heatwatch estrus detection system for remotely monitoring breeding activity. This system was used on the captive caribou in the fall of 2000.

JOB 4: We continued to evaluate in vivo methods for estimating nutritional condition in caribou. We used ultrasonography to refine equations for predicting fat and protein reserves and we sampled blood to assess relationships between various metabolites and energy balance. Three caribou were processed for body composition.

JOB 5: No new activity has been performed on this job during this reporting period.

JOB 6: To examine cytotoxic and genotoxic effects, moose hepatocytes were harvested from moose being sacrificed for other purposes. Liver samples were removed via sterile procedure from freshly-killed moose, cryopreserved, and transported to Anchorage for lab processing. To date, 2 hepatocyte cell cultures were established, and these remained viable for up to 1 month. Development of new methods for assaying protein and energy digestibility of moose browses has also begun.

JOB 7: Caribou were assigned to a variety of treatments designed to duplicate the nutritional conditions existing on winter ranges with varying degrees of lichen abundance. Caribou were handled periodically throughout trials to permit weighing, determination of body condition using ultrasonography, and blood sampling for assays of PSPB, IGF-1, T<sub>4</sub>, 3-Methylhistidine, hydroxyproline, and creatinine. Lab analyses of blood and snow urine metabolites is in progress.

## **III. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD**

In conjunction with Job 6, we collaborated with two Federal Refuges (Kanuti Refuge and Yukon Flats Refuge) to collect and analyze important browses for moose. Collections were completed in the winter, and nutritional work began in June 2001.

## **IV. FEDERAL AID TOTAL PROJECT COSTS FOR THIS SEGMENT PERIOD**

\$ 75,800

## **V. PREPARED BY:**

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## **APPROVED BY:**

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Division of Wildlife Conservation

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Donald Spalinger  
Research Coordinator

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Wayne L Regelin, Director  
Division of Wildlife Conservation

**APPROVAL DATE:** \_\_\_\_\_